Program - 1

Aim: Illustrate and demonstrate the working model and principle of Find-S algorithm.
Program: For a given set of training data examples stored in a .CSV file, implement and demonstrate the Find-S algorithm to output a description of the set of all hypotheses consistent with the training examples.

Algorithm:

1. Initialize h to the most specific hypothesis in H
2. For each positive training instance x
   - For each attribute constraint a_i in h
     If the constraint a_i is satisfied by x
     Then do nothing
     Else replace a_i in h by the next more general constraint that is satisfied by x
3. Output hypothesis h

TABLE 2.3
FIND-S Algorithm.

Program:

```
data = pd.read_csv('Dataset10.csv')

data.head()

data = data.drop(['Day'], axis = 1)

data.head()

attribute=np.array(data)[:,:-1]

print(attribute)

target=np.array(data)[:,-1]

print(target)

def train(att,tar):
    for i,val in enumerate(tar):
        if val=='Yes':
            specific_h=att[i].copy()
            break
    for i,val in enumerate(att):
        if tar[i]=='Yes':
            for x in range(len(specific_h)):
                if val[x]!=specific_h[x]:
                    specific_h[x]='?'
                else:
                    pass
    return specific_h
```

print(train(attribute,target))

DATASET: PlayTennis.csv

	Day	Outlook	Temperature	Humidity	Wind	PlayTennis
0	D1	Sunny	Hot	High	Weak	No
1	D2	Sunny	Hot	High	Strong	No
2	D3	Overcast	Hot	High	Weak	Yes
3	D4	Rain	Mild	High	Weak	Yes
4	D5	Rain	Cool	Normal	Weak	Yes

OUTPUT:

```
['?' '?' '?' '?']
```

DATASET: EnjoySport.csv

	Sky	AirTemp	Humidity	Wind	Water	Forecast	EnjoySport
0	Sunny	Warm	Normal	Strong	Warm	Same	1
1	Sunny	Warm	High	Strong	Warm	Same	1
2	Rainy	Cold	High	Strong	Warm	Change	0
3	Sunny	Warm	High	Strong	Cool	Change	1

OUTPUT:

```
array(['Sunny', 'Warm', '?', 'Strong', '?', '?'], dtype=object)
```